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Computer-technology firms have been among the leading recipients of U.S. venture capital.

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VENTURE CAPITAL INVESTMENT TRENDS IN THE UNITED STATES AND EUROPE

Both the United States and Europe have sizable and increasingly active venture capital markets. In 1996, U.S. venture capital investments reached \$9.4 billion, recovering from a 1991 recession low of about \$2.6 billion.¹ Venture capital investments in 17 European countries totaled 6.8 billion European currency units (ECU) in 1996; this is about \$8.6 billion and nearly twice the amount invested in Europe in 1993.² The United Kingdom leads Europe in both the number of venture-backed investments made and the amount invested in British companies. France, Germany, and the Netherlands follow, in that order.

Venture capital can facilitate the growth of promising small companies and the development and introduction of new products and technologies into the marketplace. It is an important source of funds used in the formation and expansion of small high-tech companies.

Venture capital investments tend to be long term and high risk and have a potential for large payoffs to the investor. Typically, these investments go to small, young companies that may not meet the lending requirements for public or credit-oriented institutional funding. These investments may also be accompanied by hands-on involvement in the firm by the venture capitalist.

¹ These data differ from those recently reported in *Science & Engineering Indicators—1998*. In the fall of 1997, Venture Economics Investor Services of Newark, New Jersey, the source for these data, expanded its definition of venture capital disbursements to include venture capital disbursements made by buyout funds and buyout financing provided by venture capital funds. Data reported in this Issue Brief reflect that change and update U.S. venture capital investments through 1996.

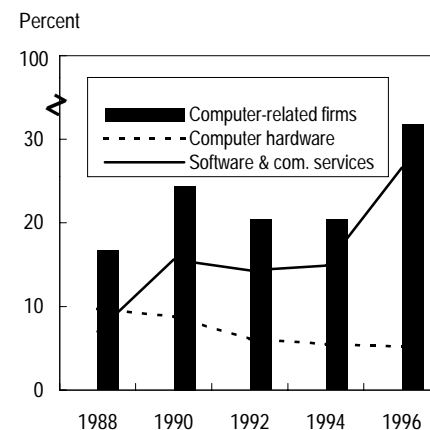
² Data on U.S. and European venture capital come from two different sources and therefore are not strictly comparable. Notably, data on European venture capital investments reflect a somewhat broader array of financing by buyout funds. For that reason, trends in venture capital disbursements for the United States and Europe are examined separately. Venture Economics Investor Services compiles data on the U.S. venture capital industry; the European Venture Capital Association, in Zaventem, Belgium, compiles data for 17 European markets.

Which Technology Areas Attract Venture Capital Investment in the United States?

Computer technology businesses—those engaged in hardware or software production, including computer-related services—have been among the leading recipients of venture capital in the United States. Medical/health-care-related companies have also attracted large amounts of venture capital, as have telecommunications companies.

Over the 10-year period examined, 1987-96, computer technology businesses received 15 to 32 percent of all U.S. venture capital fund investments. At the beginning of this period, computer hardware firms attracted more venture capital than those specializing in computer software—but that changed in 1990. Starting that year, software firms (which here include both software developers and computer service providers) received more venture capital than computer hardware firms, with the gap widening thereafter (figure 1). In 1995 and 1996, software was far and away the most favored technology area for venture capital investments. Software companies received about one-quarter of the \$16.6 billion disbursed over those two

Figure 1. Share of U.S. venture capital investments to computer-related firms: 1988-96



SOURCE: Venture Economics Investor Services, (1997).

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years—50 percent more than that invested in communications companies and about four times the amount going to computer hardware companies or biotechnology companies (table 1).

than 5 percent of all U.S. venture capital disbursements, and most often represented between 3 and 4 percent of annual totals (figure 2). A bigger proportion of venture capital

Table 1. U.S. venture capital disbursements by industry category: 1987-96

Millions of current U.S. dollars

Industry category	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total amount disbursed.....	4,875.4	5,992.5	6,255.6	3,854.2	2,649.3	4,943.3	5,310.5	5,266.5	7,160.7	9,420.6
Computer hardware.....	631.0	581.7	488.5	340.7	274.0	301.5	167.8	288.6	484.1	493.7
Computer software and services.....	527.0	417.5	463.1	600.0	458.0	706.0	1374.8	782.9	1466.5	2510.2
Semiconductor and other electronics.....	433.2	425.3	351.8	247.2	189.1	267.9	175.8	260.1	413.4	475.5
Communications.....	521.4	922.7	884.0	640.2	297.6	1,068.7	613.5	832.3	1,321.5	1,325.3
Business services.....	87.5	266.6	72.9	157.0	96.6	74.1	114.3	90.2	325.9	392.4
Medical/health care related....	537.5	526.0	1,139.8	564.3	363.6	901.4	701.2	970.4	1,022.5	1,191.1
Biotechnology.....	338.8	309.6	330.9	296.5	290.8	473.2	542.8	488.7	412.1	645.1
Industrial products.....	316.6	311.4	343.8	208.1	112.5	304.7	125.0	149.4	279.0	373.0
Manufacturing.....	267.1	403.7	299.9	126.6	117.7	139.1	64.7	46.6	180.7	266.6
Energy.....	68.1	9.8	78.4	52.4	5.0	28.4	21.4	48.6	59.2	161.2
Transportation.....	68.0	98.7	78.7	84.8	30.2	116.4	36.4	25.6	93.5	18.3
Consumer related.....	900.5	1,319.8	1,166.8	423.1	241.0	377.8	751.6	973.3	779.9	1,256.9
Finance, insurance, real estate.....	103.2	282.3	513.7	96.6	108.0	81.0	597.9	248.7	174.9	198.3
Other products and services....	75.5	117.4	43.3	16.7	65.2	103.1	23.3	61.1	147.5	113.0

SOURCE: Venture Economics Investor Services, (1997).

Since 1990, computer software firms have attracted more venture capital than computer hardware firms.

How Much U.S. Venture Capital Gets Distributed as Seed Money?

Very little venture capital goes to an inventor, entrepreneur, or small company for research or for trying to prove a concept.³ Over the past 10 years, such seed money never accounted for more

³ The investments made by venture capital firms may be categorized by the stage at which financing is provided:

- *Seed financing*—usually involves a small amount of capital provided to an inventor or entrepreneur to prove a concept.
- *Startup financing*—provides funds to companies for use in product development and initial marketing.
- *Other early-stage financing*—provides funds to companies that have exhausted their initial capital and need funds to initiate commercial manufacturing and sales.
- *Expansion financing*—includes working capital for the initial expansion of a company or for major growth expansion, and financing for a company expecting to go public within six months to a year.
- *Leveraged buyout financing*—includes funds to acquire a product line or business from either a public or private company, utilizing a significant amount of debt and little or no equity.
- *Acquisition financing*—provides financing to obtain control, possession or ownership of a private portfolio company.

The first three may be referred to as “early stage financing” and the remaining three as “later stage financing.”

monies went to support product development and initial marketing—often referred to as startup funds—but these investments still typically accounted for only about 8 to 10 percent of annual totals.

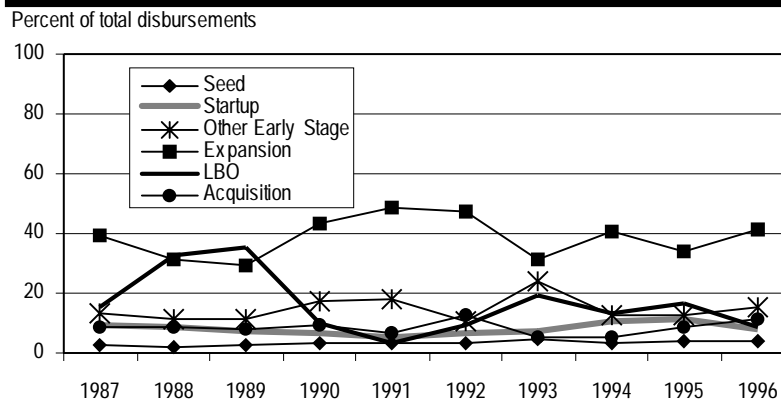
An examination of venture capital disbursements to companies since 1987 clearly shows that most of the funds are directed to later stage investments. Over the past 10 years, later stage investments captured between 62 and 76 percent of venture capital disbursements, with the high and low points both reached in the 1990s. Capital for company expansions attracted by far the most investor interest.

European Venture Capital Investments

Data compiled by the European Venture Capital Association track venture capital activity in 17 countries. In 1996, over 5,000 separate investments were recorded, with total disbursements exceeding \$8.5 billion—an 18-percent increase over 1995. The United Kingdom leads Europe in both the number of venture-backed investments made and the amount invested in U.K. companies during 1996 (33 percent and 44 percent, respectively). France, Germany, and the Netherlands follow, in that order. Together

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Figure 2. U.S. venture capital disbursements, by financing stage: 1987-96



Stage	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Millions of current U.S. dollars										
Seed.....	114.1	127.1	174.0	117.2	86.6	154.2	255.5	189.1	282.6	384.2
Startup.....	458.4	499.8	451.7	267.5	137.8	341.3	401.0	561.8	828.1	750.3
Other early stages.....	662.4	675.2	702.2	676.9	478.6	542.7	1274.1	656.2	889.2	1,413.8
Expansion.....	1,919.8	1,865.3	1,849.7	1,679.3	1,295.3	2,338.3	1,667.9	2,149.8	2,438.4	3,921.5
LBO.....	738.2	1,951.8	2,225.7	394.1	91.6	466.5	1,033.3	705.1	1,206.5	830.0
Acquisition.....	414.4	508.4	487.6	357.8	170.6	641.1	286.1	274.2	614.9	1,075.8
Other.....	568.1	364.9	364.7	361.4	388.8	459.2	392.6	730.3	901.0	1,045.0
Total.....	4,875.4	5,992.5	6,255.6	3,854.2	2,649.3	4,943.3	5,310.5	5,266.5	7,160.7	9,420.6

NOTE: LBO = leverage buy-out.

SOURCE: Venture Economics Investor Services, (1997).

The types of firms attracting venture capital in Europe appear to be less research intensive than those in the United States.

with the United Kingdom, they accounted for three-fourths of all European venture capital disbursed in 1996.

As in the United States, venture capitalists in Europe are attracted to young, small fast-growing companies in need of capital and management expertise. Europe now has venture-capital-backed investments all across the continent, including in many of the transitioning economies of Central and Eastern Europe. The nonfinancial support that often accompanies venture capital investments tends to be more active and hands-on in the transitioning economies (European Venture Capital Association, 1997).

Which Technology Areas Attract Venture Capital in Europe?

Although information and communications technologies, medical/health care technologies, and biotechnology garner the lion's share of U.S. venture capital, the technology areas and types of firms attracting venture capital in Europe are less research intensive. Europe has long held a repu-

tation for excellence in industrial machinery and equipment, fashion, and leisure products (e.g., sporting goods). These same industries are among the top recipients of European venture capital. More than 30 percent of venture capital investments (i.e., both number of investments and as a percentage of the total capital distributed in 1995 and 1996) were made in companies providing industrial products such as machine tools, pollution control and recycling equipment, and high-fashion clothing and other consumer products. By comparison, European computer-related companies received only 7 percent of the venture capital distributed in 1995 and 5 percent in 1996. European biotech companies received even less attention, although both the number and size of the investments in this industry increased in 1996 over the previous year.

The Role of Seed Money in Europe

European venture capitalists, like their American counterparts, direct only a small portion of capital disbursements as seed money or startup

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capital (figure 3). Investments for expanding an existing company's productive capacity, helping a company add a new product line, or enabling a company to acquire an existing business—later stage investments—account for more than 85 percent of European venture capital disbursements. For the past five years (1992-96), early stage invest-

ments provided as seed or start-up capital never accounted for as much as 7 percent.⁴

Seed money, often used to finance research or concept development, averaged less than 1 percent from 1992-95; in 1996, startup capital for product development and initial marketing reached its highest point in five years, when it represented about 6 percent of venture capital disbursements.

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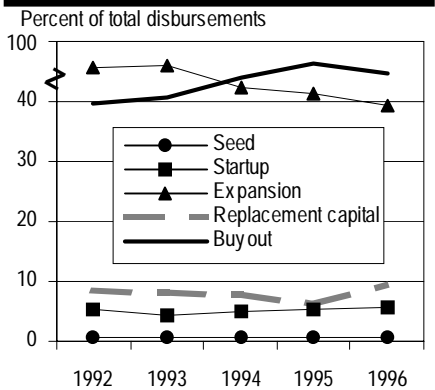
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Figure 3. European venture capital disbursements by stage of financing: 1992-96



Stage	1992	1993	1994	1995	1996
Millions of current U.S. dollars					
Seed.....	35	25	44	44	70
Startup.....	326	211	325	375	490
Expansion.....	2,792	2,211	2,729	3,007	3,365
Replacement capital.....	523	405	516	463	829
Buyout.....	2,147	1,967	2,856	3,364	3,818
Total.....	5,823	4,818	6,470	7,254	8,572

SOURCE: European Venture Capital Association, (1997).

⁴The definitions of seed capital and startup capital used by the European Venture Capital Association (EVCA) are essentially identical to those used by Venture Economics to classify U.S. venture capital disbursements. EVCA classifies all remaining venture capital disbursements in three additional categories:

- *Expansion financing*-provides funds to initiate commercial manufacturing and sales, finances for the growth and expansion of a company, as well as funds to help companies experiencing trading difficulties.
- *Replacement capital*-provides funds to purchase existing shares in a company from another venture capital investment organization.
- *Buy-out financing*-financing used by current management, outside management, investors, or any combination of these three to acquire an existing business.

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